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New Powers Imply New Responsibilities: The Example of the Autonomous Car

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“New powers imply new responsibilities”

The problem is topical and even central since we are witnessing a slow evolution in the typology of road accidents. Indeed, there are several cases of accidents related to a driving automation system.

In 2016, a first fatal accident involved a TESLA vehicle equipped with the “Autopilot”¹⁾ system. The latter has focused the spotlight of the law on the potential shortcomings of liability law in the face of these new technological players. In this case, the vehicle struck a truck when neither the driver nor the system had detected the truck’s maneuvering or applied the brakes. The investigation conducted by the National Safety and Transportation Council in the United States revealed that the driver had not reacted, despite having received several alerts from the system. The manufacturer’s liability is therefore *a priori* excluded and *de facto* leaves the driver alone to assume the obligations of vigilance and control of the vehicle. As a reminder, the driver had to remain in control of his vehicle.

In 2018, in the United States, an accident involving a vehicle testing Uber’s services fatally hit a pedestrian pushing his bike across the road outside the protected crossings in 2018, even though night had fallen. The investigation will reveal that Uber had chosen to remove some sensors. However, determining the origin of accidents remains fundamental to identifying responsibility, especially since the Tempe Chief of Police, in charge of investigating the accident of the vehicle, stated: “it would have been difficult to avoid this collision regardless of the driving world, given the way the victim appeared on the road”. Perhaps the solution to the trolley dilemma lies here²⁾: «would you kill one person to save many others?»

All these accidents, including those involving an autonomous shuttle, have

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1) “Autopilot” is defined by the manufacturer as an “improved autopilot” system - www.tesla.com

2) <https://www.theguardian.com/science/head-quarters/2016/dec/12/the-trolley-problem-would-you-kill-one-person-to-save-many-others>

contributed to the acceleration of international governmental actions to determine the applicable liability regime and to supervise the deployment of “autonomous vehicles”. Thus, the issue of transferring the responsibility for driving from the driver to the manufacturers or manufacturers of the “intelligent” components of the vehicle appears to be a major area of reflection³⁾. It is of increasing interest to the European authorities and to legal doctrine, which is already considering whether it is appropriate to modify the legal regimes in force. But it is also a new issue for insurers, who will have to be able to offer appropriate commercial offers.

I. A necessary evolution of global legal and insurance frameworks

A. A slow evolution of global legal regimes

In the United States, the first country to experiment with autonomous cars on open roads in 2011, many states have legislation on autonomous vehicles. For example, the State of Nevada requires a driver in the vehicle who is able to take control of the vehicle at any time. In 2016, the State of Florida removed this condition by allowing remote supervision and on the condition that a driver alert system be integrated.

In Japan, The Prime Minister announced a public autonomous vehicle service in Tokyo in 2020 for the Olympic Games. AND he says that those cars will also be tested on Japanese roads before the end of this year.

Germany, for its part, has authorized the use of “autonomous vehicles” of level 3 and 4 under certain conditions by a law that came into force in June 2017. For example, it is provided that the delegation of the driving task may only be authorized within the limits of the approved functions of a vehicle and that a driver is always present in the vehicle in order to be able to regain control of it⁴⁾.

In France, the legislator maintains the requirement of a natural person driver but considers the possibility that he may be outside the car provided that he is able to maintain control and supervision of the vehicle⁵⁾. The future Pact law and the next mobility orientation law should also go in the same direction and allow French manufacturers to carry out experiments up to range level 5, which will

3) The opinion of the Council of State on the draft Pact law (EC, opinion, 14 June 2018, n° 394.599 and 395.021) as well as the resolution of the European Parliament of 15 January 2019 on autonomous vehicles in European transport (2018/2089 (INI)).

4) www.buzer.de/gesetz/848/v206377-2017-06-21.htm

5) Experiments on autonomous vehicles in France are governed by the Energy Transition Act of 17 August 2015 (Law n° 2015-992), by the Ordinance of 3 August 2016 (Ordinance n° 2016-1057) and by the decrees of 28 March 2018 (n° 2018-211).

eventually allow the commercial deployment of “autonomous vehicles”.

Despite these legal developments, in France but more generally in most European countries, the introduction on the market of “autonomous vehicles” requires compliance with technical standards allowing the approval of vehicles, as well as legal standards, first and foremost the Vienna Convention of 8 November 1968⁶⁾, which prevails over the provisions of national law⁷⁾.

Today, the Vienna Convention requires the presence of a driver who is proficient in driving his vehicle. While the last amendment to the Vienna Convention, which entered into force on 23 March 2016, introduced a paragraph 5bis into Article 8 (5), which allows all on-board systems affecting driving, the latter has important limitations.

Indeed, the amendment to the Vienna Convention did not change the notion of “driver” or the requirement for “control” of the vehicle by the latter. Thus, the technologies of driving delegation integrated into the vehicle are compatible with the said Convention only if a natural person is able to take over the vehicle at any time. In the absence of a definition of the notion of control or control of the vehicle, it is possible to consider that a driving system can control the environment alone, the human being only having the obligation to control the system. International discussions show in this respect that more or less long-term developments are necessary to remove the requirement for a natural person driver. An evolution if not necessary, inevitable only the law, by its adaptability, is able to grasp. Starting with the apprehension of the particularism of autonomous vehicles by insurance law.

B. The central role of insurance companies

Since the law of 27 February 1958⁸⁾, France has introduced compulsory insurance to protect the owner of a vehicle against accidents involving it. This insurance, known in France as “third party insurance”, has since been made compulsory throughout Europe by Directive 72/166/EEC of 24 April 1972.

In this respect, Article L. 211-1 of the Insurance Code generally requires

6) The objective of the Vienna Convention is to facilitate international road circulation and increase safety on the roads through the adoption of uniform rules for circulations” (preamble).

7) If the highway code does not comply with the Vienna Convention and, in particular, if it contains provisions contrary to the Convention, then the Convention prevails over the provisions of the Highway Code.

8) Law n° 58-208.

compulsory insurance for persons wishing to operate a land motor vehicle.

Article L. 211-1: “Any natural person or any legal person other than the State, whose civil liability may be incurred for damage suffered by third parties resulting from damage to persons or property in the performance of which a vehicle is involved, must, in order to make it run, be covered by insurance guaranteeing such liability, under the conditions set by decree in the Council of State”.

Insurance is therefore compulsory for any machine qualified as a land motor vehicle, the definition of which is given by Articles L. 211-1 of the Insurance Code but also by Article L. 110-1 of the Highway Traffic Act, which respectively define a land motor vehicle as “any motor vehicle intended to travel on the ground and which can be powered by mechanical force without being connected to a railway track, as well as any trailer, even if not coupled” or as “any land vehicle equipped with a propulsion engine, including trolleybuses, and running on the road by its own means, with the exception of vehicles travelling on rails”.

Thus, all vehicles that can be qualified as “autonomous” or “semi-autonomous” are covered by the provisions relating to compulsory insurance since they meet the stated criteria. This concept of compulsory insurance, which is relatively broad, therefore makes it possible to bring the user of an autonomous vehicle within the scope of the guarantee without imposing any particular criteria relating to the quality of “driver”. However, there is still uncertainty as to the qualification of these new technological players with regard, in particular, to the legal requirements laid down by the Highway Code.

Insurance companies are therefore strongly interested and already impacted by the advent of autonomous vehicles since their insurance contracts will have to be modified or even redesigned, mainly because of the change in risk. In addition, the introduction of new risks will most certainly revolutionize the scope of optional cover, since the European Commission, analyzing the directives requiring insurance against motor vehicle risk, considered that “autonomous cars” fall within the scope of French and even international texts.

Moreover, the mandatory provisions relating to the purchase of “third party” insurance do not, under French law, prevent the purchase of optional cover that could be reinvented in view of the specific features of the “autonomous vehicle”.

II. Who is responsible for compensating victims?

As with the issue of data collection and processing, the question of who is responsible for compensating victims is certainly one of the major legal challenges

of the 21st century, since this question aims to determine the impact of the introduction of “autonomous” vehicles on the regulation of compensation for road accident victims.

At the dawn of the actual circulation of autonomous vehicles, three questions arise in reality: that of determining the status of the victim (e. g. driver or non-driver), that of the final debtor of compensation as soon as the driver receives driving assistance, but also that of determining whether a contribution recourse by the “payer” insurer, called *solvens*, is possible.

A. Compensation of victims by the Badinter law of 5 July 1985

Compensation for victims of a traffic accident involving an “autonomous” vehicle requires a distinction according to the quality of the victim. Indeed, the *Badinter* law distinguishes between whether the victim is a driver or not.

Article 1 of the *Badinter* Act of 5 July 1985 stipulates that: “The provisions (...) shall apply, even when carried under contract, to the victims of a road traffic accident involving a motor vehicle and its trailers or semi-trailers, with the exception of railways and tramways operating on their own tracks”.

3 cumulative conditions are therefore considered and necessary for the provisions of the *Badinter* law to be applicable.

In view of the tragic events that took place in 2016 and 2018 in the United States, there is little doubt that the “autonomous vehicle” can be considered as a land motor vehicle capable of being involved in a traffic accident. Moreover, if we look closely at it, the primary interest of the *Badinter* Act concerning compensation for victims lies in the burden of proof. Indeed, in view of the technical nature of “autonomous vehicles”, this point is essential in the societal acceptability of this new technology.

Consistently in French law, the case law specifies that the civil liability of the author of a damage is established only if a causal link between the fault and the damage is reported⁹⁾. However, under French common law, the burden of proof of causation lies with the victim¹⁰⁾. On the basis of this premise, the question of proof of causation appears to be a definite obstacle to the compensation of victims in the event of a traffic accident involving an autonomous vehicle. Indeed, how to establish the causal link of a vehicle using artificial intelligence? The technicality

9) Cass. 2nd civ., 27 October 1975, n° 74-10.318 and 73-14.891.

10) Article 1353 paragraph 1 of the Civil Code: “Anyone claiming the performance of an obligation must prove it.”

and expertise necessary to decipher the vehicle's behavior necessary to establish a causal link is only within the reach of an expert.

Thus, by removing any link to causality, the *Badinter* Act made it possible to speed up procedures for compensating victims by basing it on proof of the vehicle's involvement. This is why the insurance obligation allows the compensation of victims to be covered not by the driver and/or guardian of the vehicle involved, but by his insurer.

In theory, we should not have to wonder about the causal or not, active or passive role of a vehicle involved in a traffic accident. This is why the French legislator has used the notion of vehicle involvement. In this way, it has freed itself from the notion of causality traditionally associated with the establishment of the civil liability of the author of a damage. Moreover, French case law has repeatedly excluded the requirement of an active fact of the vehicle in the occurrence of the damage¹¹⁾. Therefore, in accordance with the *Badinter* Act, it is not necessary to search for the person responsible for the accident, but for the *solvens*, i.e. the person who will be held liable for compensation to the victim, in other words, the insurer. It is the responsibility of the latter to act in liability against the real perpetrator of the accident. However, assuming the advent of SAE 4 or even 5 level cars, the problem induced by the use of artificial intelligence will be identical to the one mentioned above: how could *solvens* establish the causal link?

The originality of the notion of involvement therefore lies in the fact that, in the case of a road accident, proof of fault is not required, or the exclusion of a disruptive role that involves fault, but the intervention of the vehicle in any capacity whatsoever in the occurrence of the damage. This is why, in the absence of contact between the vehicles, the mere presence of the vehicle is not sufficient to characterize the involvement¹²⁾. However, while evidence of disruptive behavior does not have to be reported, the Court of Cassation has reiterated a now constant position that the victim must provide evidence of the role of the vehicle in the accident, and refers the analysis of the evidence submitted to it to the sovereign assessment of the trial judges¹³⁾.

The notion of involvement is therefore very favorable to victims. It is defined independently of any fault and thus constitutes an original provision and is compatible with the introduction of "autonomous" vehicles. It makes it possible to

11) Cass. 2nd civ., 4 December 1985, n° 84-13.226; Cass. 2nd civ., 23 March 1994, n° 92-12.253.

12) Cass. 2nd civ., 2 March 2017, n° 16-15.562.

13) Cass. 2nd civ., 26 October 2017, n° 16-22.462.

lighten the burden of proof but also to consider that the introduction of “autonomous vehicles” would not be binding from the point of view of compensation. In this way, these legislative provisions contribute to the acceptability of this new technology.

While French law has been applying this system for more than 30 years and can, at first sight, serenely apprehend the introduction of “autonomous vehicles”, the situation is quite different in many countries. Abroad, the question of the person responsible for compensation is a question for many legislators, particularly in Germany and England.

Victims may be forced to report the driver’s fault in order to be entitled to compensation. Some laws have therefore been amended to take into account the particularities generated by the traffic of vehicles for which the driver’s driving task has been transferred to the system.

In this respect, German law, in June 2017, authorized the use of “autonomous vehicles” of levels 3 and 5 under certain well-defined conditions: on the one hand, the delegation of the driving task is authorized only within the limits of the approved functions of a vehicle and, on the other hand, there must always be a driver, which requires the latter to take back control if the vehicle requests it. In the United Kingdom, the Automated and Electric Vehicles Act of 2018 requires the vehicle insurer to compensate victims of an accident involving an “autonomous vehicle”. However, this law very restrictively defines the vehicle covered by these provisions. Indeed, it concerns the vehicle that is not controlled by any human and does not need to be monitored, i.e. a vehicle of minimum level 4. In France, the legislator seems to have taken note of the favorable provisions of the *Badinter* Act because the draft Covenant Act does not, for the time being, call into question the principle of compensation for victims.

It should be noted that the *Badinter* law does not define the notion of “accident”. According to the Larousse French dictionary, an accident is defined as a “fortuitous event that has more or less damaging effects on people or things. However, there will only be a traffic accident when it occurs in a place of traffic, private or public, even if the vehicle is parked¹⁴⁾”.

14) Cass. 2nd civ., 28 October 1991, n° 89-17.598.

B. Assumption that the conditions of the Badinter Act do not apply**1. Compensation of victims by the common law of liability for damage caused by events**

Where the conditions of the *Badinter* Act are not met, the victim is not prohibited from bringing an action for compensation on the basis of ordinary law with the motor insurer of the vehicle involved.

Indeed, if the damage originates from something, as is the case for a vehicle, the victim can claim compensation for his or her damage on the basis of liability for things. This liability regime is a case law creation resulting from the Jand'heur judgment of the United Chambers of the Court of Cassation of 13 February 1930.

However, the implementation of this regime requires three conditions to be met: one thing, one thing, one thing and one guardian of the thing. Thus, in principle, anything such as an “autonomous vehicle” is likely to be considered as the cause of damage. The burden of proof of the role of the thing in the realization of the damage will be on the victim. It should be noted with regard to the burden of proof that the Jand'heur decision raised a presumption of causation when things are in motion. On the other hand, when the thing is inert, the victim will have to provide proof of the abnormality of the thing.

It should be noted that liability for acts of God is an objective liability, i.e. the guardian cannot exonerate himself from his liability by proving that there is no fault. On the other hand, he may be exonerated from any liability if he demonstrates force majeure, or possibly for a partial exemption, the fact of the victim¹⁵⁾.

The determination of the guardian of the thing and therefore of the car is a much more sensitive issue. It presupposes that the traditional conception of the guard is understood in advance in view of the possible problems that could arise from the deployment of “autonomous vehicles”.

Custody is defined through the notions of use, control and direction over the thing. Thus, the person who had the material possession of the object at the time of the damage and who exercised some control over it is considered to be the guardian. The owner of a vehicle can therefore exonerate himself, in theory, from his liability when he proves that he did not exercise the powers of use, direction and control characterizing the custody on the car, without having to determine to whom the custody was transferred.

However, as far as the user of an “autonomous vehicle” is concerned, it seems

15) Example: for a diverted use of a springboard: Cass. 2nd civ., 24 February 2005, n° 03-18.135.

more delicate to attribute *de facto* the status of guardian to him/her. Indeed, let us take the example where the vehicle is in motion, the guard will then in principle be the driver who can however be a different person from the owner of the vehicle, in particular in the event of a loan or theft. In this hypothesis, the Court of Cassation seems to refer to the classic notion of guardian, retaining that the person behind the wheel of a towed vehicle retains the status of driver and therefore ultimately guardian because he retains a certain “control” of the vehicle¹⁶⁾. This leads us to believe that the recognition of the responsibility of the car user will always be engaged, even in the case of a level 3 driving aid. However, it will be different if the user has the possibility to take control of the vehicle, which will most probably be the case even for vehicles with a range of 4 and 5.

Consequently, the situation described above allows the “autonomous vehicles” to be put into service without much difficulty, at least in terms of determining the person responsible. On the other hand, in the event that the vehicle is equipped with a full driving delegation, i.e. when its user does not have the ability to “take control” of the vehicle once the assistance has been activated, it would seem very difficult, legally, to recognize the latter as a guardian. Common sense governs this analysis. So what solution?

Perhaps it would then be legally appropriate to apply, with regard to “autonomous vehicles”, a dormant theory since a decision of the Court of Cassation of 5 October 2006 and to the introduction of a specific regime of liability for defective products, namely the distinction between the custody of the structure and the custody of the behavior.

As a matter of principle, since the Franck judgment of 2 December 1941, custody is alternative since two persons cannot, in principle, exercise custody of a thing at the same time.

Thus, in the absence of a definition of a “certain control” of the “autonomous vehicle”, as understood by the judges to recognize the responsibility of drivers, it would be appropriate to consider a sharing between the guardian of the vehicle structure (the manufacturer) and the guardian of the vehicle’s behavior (the vehicle user). In terms of driving an autonomous vehicle, some authors have distinguished between material and intellectual direction¹⁷⁾. Indeed, it could very easily be

16) Cass. 2nd civ., 14 January 1987, No. 85-14.655.

17) P. Larcher, “Aides à la conduite automobile et droit français de la responsabilité civile, PhD thesis University of Maine, under the supervision of M. Guilbot and P. Callé, defended on 29 November 2010.

assumed that in the presence of a vehicle equipped with a driving delegation system, the latter being in reality under the physical “control” of the machine. Man would then be *de facto* excluded from the decision-making equation.

According to this old theory, it would then remain to differentiate the person responsible according to the nature of the assistance provided. Two possibilities.

First, the assumption that the user can only give intellectual instructions and that the car alone would decide what maneuvers to perform (SAE levels 4 and 5). In this case, the guardian of the structure (which will be determined to the extent that it would be possible to consider engaging the liability of the vehicle manufacturer or software developer etc.) will be liable for damage caused by the defect in the vehicle. On the other hand, the user, holder of the intellectual control of the vehicle, i.e. the guardian of the behavior, will only be liable in the event that the use of the vehicle, not defective, would be at the origin of the accident.

Secondly, and conversely, the assumption that the user is able to regain control of the vehicle at any time. In this specific case, which seems to concern a vehicle with a level 3 range, the user will retain the status of guardian of the machine and will therefore be solely liable towards the victims.

In conclusion, this dichotomy would be essential only in the context of the search for a responsible person based on the common law system of liability for things. In practice, however, this regime should only be exercised at the margin and mainly when the conditions of the *Badinter* Act are not met. Indeed, if victims can obtain compensation on the basis of the *Badinter* Act, then the notion of guardian and driver is totally indifferent as to the determination of compensation.

The responsibility will therefore inevitably follow this logic in a cascade and it will not necessarily be the responsibility of the designer.

2. Compensation for the driver who is the victim of a car defect

When a vehicle is the only one involved in a traffic accident, the *Badinter* law does not apply to the driver¹⁸⁾. Similarly, “the guardian of a land motor vehicle who is the victim of a traffic accident may not avail himself of the provisions of the law of 5 July 1985 against his own insurer to obtain compensation for his damage, in the absence of a third party driver of the vehicle who is liable for compensation in respect of him”¹⁹⁾.

On the other hand, no text excludes the application of common law regimes,

18) Cass. 2nd civ., 19 November 1986, n° 85-13.760.

19) Cass. 2nd civ., 13 July 2006, n° 05-17.095.

in particular if the accident is caused by a technical and/or mechanical failure. Consequently, in the event that the driver is held liable, but to a greater extent in the event that the *Badinter* law cannot be applied, the law allows compensation for damage resulting from a failure of the car, either on the basis of hidden defects or on the basis of defective products.

i. Compensation of the driver on the basis of hidden defects

Under French law, the application of the hidden defect regime does not raise any particular problems in anticipation of the arrival of autonomous vehicles. Indeed, the legal regime of compensation based on the hidden defect of things benefits every buyer and stipulates in articles 1641 to 1649 of the Civil Code that every seller is bound by a mandatory guarantee towards the buyer.

Article 1641 of the Civil Code: “The seller is bound by the warranty on account of hidden defects in the thing sold which make it unfit for the use for which it is intended, or which reduce this use to such an extent that the buyer would not have acquired it, or would have given only a lower price, if he had known them”.

This guarantee requires the seller to deliver goods that are free of defects and suitable for the use for which they are intended. Failing this, the seller must insure with the buyer the responsibility for defects or hidden defects affecting the property sold. This warranty applies to all buyers (professional or not) and all goods (new or second-hand).

Concerning the application to “autonomous” vehicles, this guarantee is subject to the fulfilment of four conditions laid down by law:

- A “hidden” defect affecting the car;
- A defect “prior” to the sale;
- The action in guarantee of hidden defects must be brought within 2 years from the discovery of the defect;
- The defect affecting the car must be serious or prohibitive, to such an extent that the buyer would not have bought it or would have offered a lower price if he had known about it, or that the defect in question makes the thing sold unfit for the use for which it is intended.

However, these provisions do not suffer from any particular interpretation or problem with regard to the upcoming arrival of autonomous vehicles on our roads, unlike the guarantee relating to defective products.

ii. The legal regime for compensation based on the defect of the “autonomous car

The legal regime for compensating victims of damage caused by a defective product is the subject of specific regulations, incorporated into the Civil Code by a

law of 19 May 1998²⁰⁾. It determines not only the person responsible, but also the duration of responsibility.

Under article 1245 of the Civil Code, the producer is liable for damage caused by a defect in his product: “The producer is liable for damage caused by a defect in his product, whether or not he is bound by a contract with the victim”.

As such, it is considered as a producer “any person who participates in the manufacture of the product that proves defective. That is, the application of the special liability regime extends to assimilated producers, i.e. persons who are involved in the production chain, presenting themselves in the eyes of consumers as a producer. This assimilation is the result of an extension provided for by the 1985 Directive²¹⁾, which was designed to facilitate the assumption of responsibility by large retailers.

In order to be able to hold the car manufacturer liable, the victim must therefore provide proof of a defect in the autonomous car within the prescribed time limits. As such, the limitation period applicable to civil liability actions is set by article 2224 of the Civil Code and is 5 years.

Article 2224 of the Civil Code: “Personal or movable actions are time-barred after five years from the day on which the holder of a right has known or should have known the facts enabling him to exercise it”.

However, the limitation period for the victim’s action is limited to a period of foreclosure, i.e. a period beyond which it will become impossible for the victim to bring an action. Article 1245-15 of the Civil Code provides that the producer may no longer be held liable beyond a period of 10 years following the release of the product, unless proof of a fault on the part of the manufacturer, within the meaning of article 1240 of the Civil Code, is provided, it being specified that it is accepted by the Court of Cassation that the fault cannot result solely from the marketing of a defective product.

Article 1245-15 of the Civil Code: “Unless the producer is at fault, his liability, based on the provisions of this chapter, shall be extinguished ten years after the very product that caused the damage was put into circulation unless, during that period, the victim has taken legal action”.

Article 1240 of the Civil Code: “Any act of man, which causes damage to another person, obliges the person through whose fault he has come to make reparation for it”.

20) Law n° 98-389.

21) Directive 85/374/CEE.

If the requirement of proof of the entry into service of a defective product, envisaged in article 1245-2 of the Civil Code, does not suffer from any particular remark with regard to the advent of autonomous vehicles, it is quite different with regard to the need to prove a lack of safety of the product.

Article 1245-2 of the Civil Code: “Any movable property, even if it is incorporated in a building, including products of the soil, livestock, hunting and fishing, is a product”.

The legislator has taken care to exclude the notion of obsolescence from the definition of a security defect. Indeed, article 1245-3 paragraph 3 of the Civil Code provides that the defect of a product cannot result from the “mere fact that another, more sophisticated product has subsequently been put into circulation”. However, this limit alone is not sufficient to limit the safety defect necessary for liability for defective products. Therefore, it is appropriate to refer to the purpose of articles 1245 and followings of the Civil Code to exclude concepts that do not define a safety defect. It should be noted that this regime has the particularity of applying indiscriminately depending on whether or not the victim is bound by contract to the responsible producer²²⁾.

As such, any defect appearing to be due to a lack of conformity of the product²³⁾, a hidden defect²⁴⁾ or a “dangerous” product will be excluded from the liability regime²⁵⁾.

In any event, by default, the French judges will make an assessment in abstracto, by reference to the legislative standard of “safety to which one can legitimately expect” and to which the judge must refer, taking into account “all the circumstances and in particular the presentation of the product”²⁶⁾ and the use that can reasonably be expected of it as well as the time of release.

Thus, two remarks are in order with regard to the near future of autonomous vehicles. First, where the design domain has limits of use, SAE levels 3 and 4, it

22) Article 1245 of the Civil Code: “The producer is liable for damage caused by a defect in his product, whether or not he is bound by a contract with the victim”.

23) Article 1604 of the Civil Code: “Delivery is the transport of the thing sold in the power and possession of the buyer.”

24) Articles 1641 to 1649 of the Civil Code.

25) European Directive 2001/95/EC, relating to the general safety of products and Article L. 221-1 of the Consumer Code: “Products and services must, under normal conditions of use or under other conditions reasonably foreseeable by the trader, offer the safety that can legitimately be expected and not harm the health of persons”.

26) Cass. 1st. civ., 22 November 2007, n° 06-14.174.

would be possible to consider the use of the liability regime for defective products not only in the event of mechanical and/or technical failure, but also in the event of functional limitations or even reasonably foreseeable misuse that is not brought to the attention of the user. This increases the manufacturer's obligation and imposes not only appropriate information on the user, but also proof of it.

For this reason, the presence and rigor of the operating instructions will be of utmost importance. This is why one of the manufacturers' concerns today is to demonstrate the safety of the "autonomous vehicle". The insecurity presented could thus justify the regulatory introduction of a safety demonstration dossier by regulating various modalities related to the particularism of "autonomous vehicles". Among the solutions considered, the "Safety of the intended Functionality" could set a minimum level of safety by guaranteeing the safe behavior of the "autonomous vehicle" under operating conditions integrating operating limits and "foreseeable" misuse.

The stakes are high and discussions are ongoing within the European institutions without it being possible at this time to determine the future of this issue and the legal solution chosen.

Secondly, despite the presence of certain legal grounds for exonerating producers from liability, it is up to the victim who invokes the defect of the product to prove it²⁷⁾. However, the proof of the defect of a product and the causal link between this defect and the damage does not follow from the simple imputability of the damage to the product in question²⁸⁾.

Therefore, if the defect of the autonomous car is not demonstrated, neither is the causal link between this defect and the damage. In other words, in the event of an accident involving an autonomous car, it is up to the victim to prove the defect of the latter vehicle. However, given the technical nature of such a car, it also seems very difficult for any user to determine and establish proof of this defect but

27) Article 1245-10 of the Civil Code: "The producer is liable for damage caused by a defect in his product, whether or not he is bound by a contract with the victim".

28) Cass. 1st civ., 27 June 2018, n° 17-17.469. "In this case, if it is certain that the product is involved in the occurrence of the damage, its defect has not been demonstrated. It is therefore not obvious that the product has a defect. Without this proof, the producer cannot be held liable. Consequently, if the defect of the product is not demonstrated, a fortiori, the causal link between that defect and the damage is not either. By holding the producer liable, despite the doubt as to the origin of the damage, the trial judges violated Article 1245-3 of the Civil Code. The response of the Court of Cassation is not surprising. It has, however, the merit of underlining its commitment to a literal application of the text and not to deduce evidence from other evidence".

also to determine who is responsible for it from the manufacturer, the software developer, etc....

Thus, if it would be possible to think of reversing the burden of proof in order to require the manufacturer to prove in particular that the vehicle is free of fault and/or defect, this solution would have the disadvantage of making the law a real brake on innovation.

In view of this observation and the delicate balance to be struck between the technological and economic interests of manufacturers on the one hand and the legal and compensatory interests of victims of accidents involving an autonomous vehicle on the other, it would seem that the problem could be reduced to an insurance issue and the identification of new risks. However, such a solution would be incomplete because it would not take into account one parameter: important: ethics.

3. The autonomous car must be “by design”

The various remedies envisaged above highlight the existence of a legal framework compatible with the deployment of autonomous vehicles. The *solvens* who have compensated the victim, or the sole driver involved in an accident and without compensation, can thus exercise a recourse with the person responsible, the one who caused the accident. Such actions allow either the repair of the vehicle or compensation for personal injury. Nevertheless, the burden of proof remains on the applicant, which could argue in favor of, *inter alia*, vehicle data recording devices. However, the problem would be equally incomplete because only an expert could read the thousands of lines of code or the software designer as such. While knowing that it is utopian from an economic and innovation point of view to reverse the burden of proof, such a solution would therefore not facilitate the burden of proof in any way.

The notion of ethics then seems to be decisive both from the point of view of the processing and collection induced by the operation of autonomous vehicles and from the point of view of the problem of liability in the event of an accident.

Indeed, starting from the concept of ethics, it would be possible to establish new criteria that would determine the development of a new insurance system but also promote the acceptability of this new technology used by autonomous vehicles: artificial intelligence. It seems that the debate that crystallizes the debates resides in the dilemma of the tramway, which could be summarized as the choice that a car could make in various situations involving values and ethical choices. It would therefore be like having a “moral” Artificial Intelligence, i.e. an artificial intelligence that would make decisions that would have an impact on people’s

lives. To rule on such questions would therefore be to give manufacturers the opportunity to distribute this risk. This option cannot be considered because ethically, this solution would be extremely questionable.

The problem of determining liability in the event of an accident with the arrival of autonomous cars is therefore a definite societal advance but represents a real social concern.

Ultimately, the quality of the data is therefore important in decision-making in the autonomous car because by its treatment it will be possible to influence the acceptability of autonomous cars but more generally on Artificial Intelligence. This is why the AI of tomorrow must be trustworthy and for that it must meet three criteria:

- Explicability: Artificial intelligence must be able to explain, i.e. make things intelligible and contextualized so that Man is able to make a decision.
- Validity: having an AI in conformity with its specifications, i.e. able to prove that the system will do what is expected of it.
- Responsibility: this means that a system must comply with the legal frameworks (by design), i.e. by default during design.

A “by design” conception is thus a first response to the problem induced by the development of intelligence in our everyday objects such as a car. There is no doubt that this solution will be refined over time. However, it has the merit, today, of not reversing the burden of proof. By this conception, it seems that the balance between the interests of industrialists and those of victims is initially found.

Conclusion

Science and technology have a strong impact on society and the autonomous car is a perfect example. Applications will be very difficult to predict. A reflection, particularly a legal one, must therefore be carried out beforehand.

Indeed, intelligent transport and artificial intelligence can transform jobs, eliminate them, but above all they will meet essential challenges in terms of mobility, urban planning, the environment, the economy...

Framing the development of tomorrow’s intelligent transport and, more generally, robotics and artificial intelligence in an ethical approach is therefore essential in order to determine the applicable liability regime.

The law must be seen as an accelerator of innovation and not as a brake.

The use of robots, autonomous cars and artificial intelligence will lead to new legislation (Example: legislation on drones) which will have to be flexible in order to take into account the rapid evolution of new technologies and its new problems.